CBRN Escape Respirator

Breathing Gas Control

Concept Requirement:

- CO_2 – Maximum Average Inhaled Concentration of 2.5%
- O_2 – Minimum Inhaled Concentration of 19.5%

CBRN Escape Respirator

Breathing Gas Control

- Concept Requirement for ABMS:
  - Simulate Six Work Rates
  - Low Work Rate – 0.5 l/min VO_2
  - Work Rate – 1.0 l/min VO_2
  - Work Rate – 1.5 l/min VO_2
  - Work Rate – 2.0 l/min VO_2
  - Work Rate – 2.5 l/min VO_2
  - High Work Rate – 3.0 l/min VO_2

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CBRN Escape Respirator

Breathing Gas Control

- Benchmark Testing (ABMS):
  - Commercially Available Escape Sets
  - Multiple ABMS Tests with Each Respirator
  - Carbon Dioxide Levels > 2.5% Observed
  - Oxygen Concentrations < 19.5% Observed
  - Testing In Process
- Non Conclusive Results

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CBRN Escape Respirator

Breathing Gas Control

- Benchmark Testing (Human Subject):
  - Testing In Process
  - Work Rates:
    - Standing
    - Treadmill @ 2.5 mph
    - Treadmill @ 3.5 mph

CBRN Escape Respirator

Breathing Gas Control

- Concept for Two Part Requirement
  - Automated Breathing Metabolic Simulator
  - Human Subject Test

CBRN Escape Respirator

Breathing Gas Control

- ABMS Component of a Two Part Requirement
  - ABMS Test To Establish Proper Operation
  - ABMS Test @ Six Work Rates
  - CO_2 Requirement > 2.5% (To Be Determined)
  - O_2 Requirement < 19.5% (To Be Determined)

CBRN Escape Respirator

Breathing Gas Control

- Human Subject Test Concept Requirement
  - Test At 3 Work Rates
    - Standing, Treadmill @ 2.5 mph and 3.5 mph
    - 10 minutes at each work rate
  - Two Test Subjects
    - Weight Requirement